DETERMINATION OF STORAGE VESSEL APPLICABILITY UNDER NSPS OOOOA

APRIL 10, 2019

PURPOSE

* Elevate awareness of potential issues regarding storage vessel applicability under technical amendments to NSPS OOOOa that are currently being finalized.

* Seek concurrence on proposed resolution.

BACKGROUND

* NSPS OOOOa contains applicability criteria for determining "storage vessel affected facilities" - i.e. a single storage vessel with the potential for volatile organic compound (VOC) emissions >/= 6 ton per year (tpy). The codified language states, in relevant part:

* "The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local or tribal authority."

EPA received a petition request after promulgation of this language, to clarify the term "maximum average daily throughput." * We did so through clarification in the preamble and a change to the definition in our recently proposed technical amendments. (See 83 FR 52056 and Attachment).

DISCUSSION

* American Petroleum Institute (API) provided comment (in response to the proposal) that the proposed language for "maximum average daily throughput" did not make sense for storage vessels which are controlled under state permits. API discussed the following suggested change to the applicability criteria at 60.5365a, in a face to face meeting with the Office of Air Quality Planning and Standards (OAQPS):

* "Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. For storage vessels equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local, or tribal authority. For storage vessels not equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the average daily throughput, as defined in 60.5430a, determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection." [emphasis added].

* On March 20, 2019, OECA staff and division management (Marcia Mia, Ginny Sorrell and Apple Chapman) met with OAQPS staff and division management (Karen Marsh, Amy Hambrick, Steve Fruh, David Cozzie, and Penny Lassiter) to discuss the API comment.

* OECA explained that the suggested language for controlled storage vessels (emphasis above) is problematic, in that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's, and those calculations can be much closer to "best-case actual emissions" than to "potential emissions".

i. We know through implementation of the rule, that while we anticipated over 10,000 storage vessel affected facilities, less than 700 were reported in the first-year compliance reports under NSPS OOOOa, because of state limits. In a review of the first year of compliance reports, we found that five facilities owned 90% of the storage vessels affected facilities, and one company (COG Energy, LLC) had almost half of the storage vessel affected facilities.

ii. From our work in the Energy Extraction Production Initiative, we know we have many issues with storage vessels which are controlled under state limits, including inadequate design, operation, and maintenance of storage vessels, closed vent systems and control devices.

iii. It is unprecedented for EPA to "give away" its applicability determination under

federal requirements to a state (and which often use a different calculation methodology, including averaging across the tank battery).

In a follow-up phone call with Peter Tsirigotis, he expressed the need to understand why the installation of controls under a state permit isn't sufficient. * OECA responded with the following reasons:

i. Atmospheric storage vessels pose unique issues as compared to pressurized vapor control systems.

ii. Inadequate design, operation and maintenance of controls can easily lead to excess emissions of dozens, or even hundreds, of tpy of uncontrolled VOC emissions from "controlled" atmospheric storage vessels.

iii. Therefore, effective controls and resulting emissions reductions for atmospheric storage vessels requires more than just installation and operation of a vapor capture system and control device.

OPTIONS FOR RESOLUTION

* Option 1: Redefine the affected facility around the tank battery.

i. Our enforcement experience, and industry comments on the proposed amendments, indicate that storage operations often occur in a tank battery, where more than one storage vessel is connected to other storage vessels, via headspace and common manifold, to a common control device (vapor recovery device (VRU), enclosed combustor or flare).

ii. The Best System for Emissions Reduction (BSER) for storage vessel emissions was identified as installation of a VRU or flare, with an assigned emissions reduction of 95%, for storage vessels with the potential for VOC emissions >/= 6 tpy. See 76 FR 52764

iii. EPA defined the "affected facility" as a single storage vessel with the potential for VOC emissions >/= 6tpy3.

iv. Since BSER was set at the control device, the number of storage vessels which route to it is immaterial for establishing the standard. Therefore, to better reflect the operational characteristics found in the field, EPA should redefine the affected facility as a tank battery with the potential for VOC emissions >/= 6 tpy.

* Option 2: If we cannot agree to changing the affected facility to the tank battery, we recommend that we do not finalize any changes to the current definition of "storage vessel," including the term "maximum average daily throughput."

i. The key difference between the currently codified language (see page 1), and API's suggested language, is that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's.

ii. OECA will continue to use its interpretation of how the "potential for VOC emissions" and "maximum average daily throughput" is determined in our enforcement actions. This includes the concepts we put forth in the preamble discussion to the proposed amendments (See 83 FR 52084-52805):

3 60.5365(e) Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local or tribal authority.

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Revisions:

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Author: Mia, Marcia

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Range: IFYDETERMINATION OF STORAGE VESSEL APPLICABILITY UNDER NSPS OOOOA

APRIL 210, 2019

PURPOSE

Prepare MAMPD management for discussion with Penny Lassiter and Apple ChapmanElevate awareness of potential issues regarding storage vessel applicability under technical amendments to NSPS OOOOa that are currently being finalized.

Provide OECA suggestions forSeek concurrence on proposed resolution.

BACKGROUND

NSPS OOOOa contains applicability criteria for determining "storage vessel affected facilities" - i.e. a single storage vessel with the potential for volatile organic compound (VOC) emissions >/= 6 ton per year (tpy). The codified language states, in relevant part:

"The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection. The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local or tribal authority.."

EPA received a petition request after promulgation of this language, to clarify the term "maximum average daily throughput."

We did so through clarification in the preamble and a change to the definition in our recently proposed technical amendments. (See 83 FR 52056 and Attachment).

Specifically, we clarified how daily production may be averaged when determining daily throughput and proposed to revise the definition to clarify that the maximum average daily throughput refers to the maximum average daily throughput for an individual storage vessel over the days that production is routed to that storage vessel during

the 30-day evaluation period.

Our clarification specifically addressed the issue of "averaging" over the number of tanks in the tank battery, which in certain operational configurations can underestimate emissions.

DISCUSSION

American Petroleum Institute (API) provided comment (in response to the proposal) that the proposed language for "maximum average daily throughput" did not make sense for storage vessels which are controlled under state permits. API discussed the following suggested change to the applicability criteria at 60.5365a, in a face to face meeting with the Office of Air Quality Planning and Standards (OAQPS):

"Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. For storage vessels equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local, or tribal authority. For storage vessels not equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the average daily throughput, as defined in 60.5430a, determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection." [emphasis added].

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OECA explained that the suggested language for controlled storage vessels (emphasis above) is problematic, in that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's, and those calculations can be much closer to "best-case actual emissions" than to "potential emissions".

We know through implementation of the rule, that while we anticipated over 10,000 storage vessel affected facilities, less than 700 were reported in the first-year compliance reports under NSPS OOOOa, because of state limits. In a review of the first year of compliance reports, we found that five facilities owned 90% of the storage vessels affected facilities, and one company (COG Energy, LLC) had almost half of the storage vessel affected facilities.

From our work in the Energy Extraction Production Initiative, we know we have many issues with storage vessels which are controlled under state limits, including inadequate design, operation, and maintenance of storage vessels, closed vent systems and control devices. This impacts the effectiveness of the state limit to achieve the required emissions reductions. See additional discussion in the Section 1 of the Talking Points, below.

It is unprecedented for EPA to "give away" its applicability determination under federal requirements to a state (and which often use a different calculation methodology, including averaging across the tank battery). □).

Subsequent to this meeting, Apple followed In a follow-up with a phone call towith Peter Tsirigotis. Peter, he expressed he neededthe need to understand why the installation of controls under a state permit isn't sufficient. In order to answer that question and provide a solution which is workable to for OECA, we prepared the talking points below.

Apple also provided Steve Fruh and Penny LassiterOECA responded with a copy of the "Storage Vessel Compliance Alert" that we produced in 2015 and a technical discussion document on the tank battery averaging issue. Apple reminded Steve and Penny of an agreement in principal that she had made with Peter, in February 2018, to close the averaging loop-hole through the OOOOa package.following reasons:

TALKING POINTS

Why isn't the installation of a control device enough?

Atmospheric storage vessels pose unique issues as compared to pressurized vapor control

systems.

The vapor system for an atmospheric storage vessel has much less margin for design error, where it will overpressurize and vent to the atmosphere after building only 12-16 ounces of pressure.

Overpressurization events bypass the control device entirely.

Inadequate requirements for design and verification of design have been a recurring issue in OECA inspections of storage vessels operating under state requirements.

This led to our September 2015 Compliance Alert following the Noble settlement.

OOOOa includes a requirement for adequate design and engineer certification of design.

Atmospheric storage vessels have thief hatches and pressure relief devices (PRVs) that frequently are opening and closing even with proper design (e.g., tank gauging, maintenance activities, breathing vacuum at night).

This means those components are "wear equipment" that will have seals break down and deteriorate and cause emissions that need to be detected and repaired - much more frequently than a traditional leak detection and repair (LDAR) component.

When such "leaks" do occur, the emissions magnitude is frequently many times the magnitude of a traditional LDAR valve or flange leak rate because the potential leak area (cross-sectional size of the "hole") caused by a deteriorated or dirty PRV or thief hatch gasket can be much greater.

Inadequate design, operation and maintenance of controls can easily lead to excess emissions of dozens, or even hundreds, of tpy of uncontrolled VOC emissions from "controlled" atmospheric storage vessels.

Therefore, effective controls and resulting emissions reductions for atmospheric storage vessels requires more than just installation and operation of a vapor capture system and control device.

What does OECA suggest?

OPTIONS FOR RESOLUTION

Option 1: Redefine the affected facility around the tank battery.

Our enforcement experience, and industry comments on the proposed amendments, indicate that storage operations often occur in a tank battery, where more than one storage vessel is connected to other storage vessels, via headspace and common manifold, to a common control device (vapor recovery device (VRU), enclosed combustor or flare).

The Best System for Emissions Reduction (BSER) for storage vessel emissions was identified as installation of a VRU or flare, with an assigned emissions reduction of 95%, for storage vessels with the potential for VOC emissions >/= 6 tpy. See 76 FR 52764

EPA defined the "affected facility" as a single storage vessel with the potential for VOC emissions >/= 6tpy.

Since BSER was set at the control device, the number of storage vessels which route to it is immaterial for establishing the standard. Therefore, to better reflect the operational characteristics found in the field, EPA should redefine the affected facility as a tank battery with the potential for VOC emissions >/= 6 tpy.

The potential for VOC emissions calculation should be across the tank battery, because the tank battery operates a single process unit ("the process of storage").

The calculation should not be averaged between the number of tanks in a tank battery. Averaging would not be consistent with the 6 tpy BSER and could allow circumvention by the addition of storage vessels to lower single tank emissions.

This calculation will greatly simplify the applicability calculus for both EPA and industry. In addition to industry comments on the proposed amendments, relating to the interrelatedness of vapor space, industry also commented that loadout tickets to determine liquid throughput of storage vessels are produced on a tank battery basis.

OECA is amenable to discussing whether the 6 tpy threshold should be increased, based

on our current understanding of the operational characteristics of tank batteries.

Option 2: If we cannot agree to changing the affected facility to the tank battery, we recommend that we do not finalize any changes to the current definition of "storage vessel," including the term "maximum average daily throughput."

API suggested the following change to the current definition:

"Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. For storage vessels equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local, or tribal authority. For storage vessels not equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the average daily throughput, as defined in 60.5430a, determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection."

The key difference between the currently codified language, (see page 1), and API's suggested language, is that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's.

We know through implementation of the rule, that while we anticipated over 10,000 storage vessel affected facilities, less than 700 were reported in the first-year compliance reports under NSPS OOOOa, because of state limits. In a review of the first year of compliance reports, we found that five facilities owned 90% of the storage vessels affected facilities, and one company (COG Energy, LLC) had almost half of the storage vessel affected facilities.

As outlined in Item 1, above, we know we have many issues with storage vessels which are controlled under state limits.

It also is unprecedented for EPA to "give away" its applicability determination to a state (and which often use a different calculation methodology, including averaging across the tank battery).

OECA will continue to use its interpretation of how the "potential for VOC emissions" and "maximum average daily throughput" is determined in our enforcement actions. This includes the concepts we put forth in the preamble discussion to the proposed amendments (See 83 FR 52084-52805):

"Maximum Average Daily Throughput" refers to the maximum average daily throughput for an individual storage vessel over the days that production is routed to that storage vessel during the 30-day evaluation period; and

The determination of "potential for VOC emissions," for an individual storage vessel, does not presume that production will be split evenly across storage vessels when there is no legally and practically enforceable limit requiring operation in that manner.

OECA may wish to consider issuing the Technical Discussion document that was previously developed (with full participation and concurrence from OAQPS and OGC). The document puts forth rationale similar to that provided in the proposed preamble discussion. The document previously was not issued due to timing issues and the agreement in principal to address the issues in SAN 5719.8.

This option misses an opportunity to align the affected facility inquiry with the battery-level, consistent with technical operational realities in the field; it also misses the opportunity to clearly establish expectations for calculation of single storage vessel "potential for VOC emissions" in this rulemaking.

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Range: Prepare MAMPD management for discussion with Penny Lassiter and Apple Chapman

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Range: BACKGROUND

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Range: DISCUSSION

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Range: TALKING POINTS

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Author: Mia, Marcia

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Therefore, effective controls and resulting emissions reductions for atmospheric storage vessels requires more than just installation and operation of a vapor capture system and control device.

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Range: What does OECA suggest?

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Range: OPTIONS FOR RESOLUTION

Option 1:

Author: Mia, Marcia

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Range: Option 1: Redefine the affected facility around the tank battery.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

Type: Paragraph Property

Format Description: Formatted: Line spacing: At least 1 pt, Numbered + Level: 1 + Numbering Style: i, ii, iii, … + Start at: 1 + Alignment: Right + Aligned at: 1" + Indent at: 1.25"

Range: Our enforcement experience, and industry comments on the proposed amendments, indicate that storage operations often occur in a tank battery, where more than one storage vessel is connected to other storage vessels, via headspace and common manifold, to a common control device (vapor recovery device (VRU), enclosed combustor or flare).

The Best System for Emissions Reduction (BSER) for storage vessel emissions was identified as installation of a VRU or flare, with an assigned emissions reduction of 95%, for storage vessels with the potential for VOC emissions >/= 6 tpy. See 76 FR 52764

EPA defined the "affected facility" as a single storage vessel with the potential for VOC emissions >/= 6tpy.

Since BSER was set at the control device, the number of storage vessels which route to it is immaterial for establishing the standard. Therefore, to better reflect the operational characteristics found in the field, EPA should redefine the affected facility as a tank battery with the potential for VOC emissions >/= 6 tpy.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: The potential for VOC emissions calculation should be across the tank battery, because the tank battery operates a single process unit ("the process of storage").

The calculation should not be averaged between the number of tanks in a tank battery. Averaging would not be consistent with the 6 tpy BSER and could allow circumvention by the addition of storage vessels to lower single tank emissions.

This calculation will greatly simplify the applicability calculus for both EPA and industry. In addition to industry comments on the proposed amendments, relating to the interrelatedness of vapor space, industry also commented that loadout tickets to determine liquid throughput of storage vessels are produced on a tank battery basis.

OECA is amenable to discussing whether the 6 tpy threshold should be increased, based on our current understanding of the operational characteristics of tank batteries.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Option 2:

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

Type: Paragraph Property

Format Description: Formatted: List Paragraph, Line spacing: At least 1 pt, Bulleted + Level: 1 + Aligned at: 0" + Indent at: 0.25"

Range: Option 2: If we cannot agree to changing the affected facility to the tank battery, we recommend that we do not finalize any changes to the current definition of "storage vessel," including the term "maximum average daily throughput."

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: API suggested the following change to the current definition:

"Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. For storage vessels equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local, or tribal authority. For storage vessels not equipped with control, the potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the average daily throughput, as defined in 60.5430a, determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection."

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

Type: Paragraph Property

Format Description: Formatted: Line spacing: At least 1 pt, Numbered + Level: 1 + Numbering Style: i, ii, iii, … + Start at: 1 + Alignment: Right + Aligned at: 1" + Indent at: 1.25"

Range: The key difference between the currently codified language, (see page 1), and API's suggested language, is that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: The key difference between the currently codified language, (see page 1), and API's suggested language, is that it bases applicability on the state's interpretation of how to calculate the potential for VOC emissions, not EPA's.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: (see page 1),

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: We know through implementation of the rule, that while we anticipated over 10,000 storage vessel affected facilities, less than 700 were reported in the first-year compliance reports under NSPS OOOOa, because of state limits. In a review of the first year of compliance reports, we found that five facilities owned 90% of the storage vessels affected facilities, and one company (COG Energy, LLC) had almost half of the storage vessel affected facilities.

As outlined in Item 1, above, we know we have many issues with storage vessels which are controlled under state limits.

It also is unprecedented for EPA to "give away" its applicability determination to a state (and which often use a different calculation methodology, including averaging across the tank battery).

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Format Description: Formatted: Line spacing: At least 1 pt, Numbered + Level: 1 + Numbering Style: i, ii, iii, … + Start at: 1 + Alignment: Right + Aligned at: 1" + Indent at: 1.25"

Range: OECA will continue to use its interpretation of how the "potential for VOC emissions" and "maximum average daily throughput" is determined in our enforcement actions. This includes the concepts we put forth in the preamble discussion to the proposed amendments (See 83 FR 52084-52805):

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

Type: Paragraph Number

Format Description: Formatted Bullets and Numbering

Range: OECA will continue to use its interpretation of how the "potential for VOC emissions" and "maximum average daily throughput" is determined in our enforcement actions. This includes the concepts we put forth in the preamble discussion to the proposed amendments (See 83 FR 52084-52805):

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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Range: "Maximum Average Daily Throughput" refers to the maximum average daily throughput for an individual storage vessel over the days that production is routed to that storage vessel during the 30-day evaluation period; and

The determination of "potential for VOC emissions," for an individual storage vessel, does not presume that production will be split evenly across storage vessels when there is no legally and practically enforceable limit requiring operation in that manner.

OECA may wish to consider issuing the Technical Discussion document that was previously

developed (with full participation and concurrence from OAQPS and OGC). The document puts forth rationale similar to that provided in the proposed preamble discussion. The document previously was not issued due to timing issues and the agreement in principal to address the issues in SAN 5719.8.

This option misses an opportunity to align the affected facility inquiry with the battery-level, consistent with technical operational realities in the field; it also misses the opportunity to clearly establish expectations for calculation of single storage vessel "potential for VOC emissions" in this rulemaking.

Author: Mia, Marcia

Date: 4/9/2019 9:33:00 AM

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